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U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NOAA CRC - U.S. EPA Region III
1650 Arch Street (3HS41)
Philadelphia, Pennsylvania 19103-2029

November 17, 1999

Mr. Jeffrey Tuttle(3HS41)
Acting BTAG Coordinator
EPA - Region III
1650 Arch Street
Philadelphia, PA 19103-2029

RE: 12th Street Landfill/Dump Site

Dear Mr. Tuttle:

The following draft comments on the information provided by Michael Towle (EPA OSC) in a November 5, 1999 memorandum regarding his request for an environmental/ecological threat evaluation for the 12th Street Landfill/Dump Site in Wilmington, Delaware. are submitted for transmittal to the RPM.

The BTAG has reviewed the subject documents and offers the following comments on behalf of FWS, NOAA, and EPA members.

The request by EPA was to provide an evaluation of the threat posed by an area of buried drums and contaminated soil and sediment along the Brandywine River in Wilmington, Delaware. Site contaminant concentrations do exceed both BTAG and other common ecological screening values (see Tables 1, 2, and 3). Some of the site specific contaminant concentrations are 8 orders of magnitude greater than screening values. This suggests that there is potential risk from contaminants in soils, sediment, and groundwater to ecological receptors.

Based on a discussion with BTAG, Michael Towle indicated he needed immediate support for stabilizing the river bank at this site and that support for a removal action would be needed at a later date. This letter is in support of stabilizing the river banks at this site. In order for BTAG to assist with determining the need for removal of soils or sediments, more information will be needed to generate preliminary removal goals (PRGs) or cleanup levels. BTAG will need to work with Mike to develope these PRGs. In addition, BTAG would like to schedule a site visit.

The information provided did not contain the entire raw data set, but only a summary (3-4 inorganics and up to 10 organics). We recommend that the entire data set be made available for review. This would help in reducing the uncertainty that the contaminants provided in the summary are the only ones of ecological concern. For those contaminants where the site specific value does not exceed the detection limit, the detection limits need to be provided. The detection limits will be compared to the ecologically sensitive benchmarks to assist in determining potential ecological risk from TAL/TCL analytes. There is also some concern about the number of samples in each of these media and the resulting uncertainty in data interpretation.

Some of the inorganic contaminant benchmarks are dependent upon site specific hardness (CaCO3) and pH values. We recommend that this information be provided. In the absence of

these data, site specific concentrations can still be compred to benchmarks, but there will be uncertainty in the interpretation of these results.

Results

A generally accepted way to screen data is to compare site values against an ecologically sensitive benchmark. In this case, the primary benchmark will be the EPA Region III BTAG screening table. This comparison produces a value normally referred to as a hazard quotient (HQ) and the formula is:

HQ = Site specific concentration/ecological benchmark.

If the HQ is equal to or greater than 1, there is potential for ecological risk. If the HQ is less than 1, there is potential for no risk. The more conservative the benchmark, the more certain that if a contaminant passes the screen, it means there is no risk. There is no association between the magnitude of the HQ and the severity of the risk posed.

Table 1 shows the site specific contaminant concentrations in surface soils, subsurface soils, drums, and ash material compared to the BTAG screening values. There were 5 surface soil samples, 3 subsurface soil samples, 4 drum samples, and 3 ash material samples. In general, Table 1 shows the HQs equal to or exceeding 1 for lead, zinc, phenol, pyrene, chrysene, benzo-a-pyrene, toluene, and barium in one or all of these media. There are at least 3 contaminants for which BTAG does not have a screening value (dibenzofuran, bis(2-ethylhexyl)phthalate, and 2-methylnaphthalene). In surface soils, the contaminants of potential concern (COPCs) include lead, zinc, pyrene chrysene and benzo-a-pyrene. In subsurface soils, the COPCs include lead, zinc, pyrene, chrysene and benzo-a-pyrene. In the drums, the COPCs include lead, zinc, phenol and toluene. In the ash material, the COPCs include lead, zinc, and barium.

Table 2 shows site specific sediment concentrations in sediment compared to BTAG screening values and some alternative screening values for both freshwater and marine waters. There were two sediment samples. For sediments, the data suggests that only the 3 inorganics (lead, arsenic, and zinc) are at concentrations which can cause potential risk for ecological receptors. At least two of the organics did not have a screening value in the BTAG table, so the potential risk from these is unknown.

Table 3 show site specific groundwater concentrations compared to BTAG ambient water quality criteria screening values. There was a single groundwater sample. This single sample suggests that lead, and zinc are potentially at concentrations that could cause risk to ecological receptors if this groundwater should reach surface waters. The majority of the organic compounds did not show a detection and 3 of these did not have a freshwater BTAG screening value.

If you have any questions, please contact Peter Knight at (215) 814-3321 or Jeffrey Tuttle at (215) 814-3236.

Sincerely,

Peter T. Knight
NOAA - Coastal Resource Coordinator

Table 1. Concentrations (mg/kg) of summary contaminants in site surface soils, subsurface soils, drums, and ash material compared with USEPA Region III BTAG screening values.

Contaminant	Surface Soil	Subsurface Soil	Drums	Ash Material	BTAG Screen	HQ (Max.)
lead	4590 - 206,000	148 - 264,000	207 - 106,000	383 - 2570	0.01	264×10^5
arsenic	24 - 117	16.2 - 29.4	5.1 - 19.7	8.9 - 26	328	0.3
zinc	1820 - 6120	1510 - 13,000	1490 - 13,600	776 - 13,400	10	1360
phenol	0.06 - 0.11	0.62	210	-	0.1	2100
dibenzo-furan	-	0.05 - 0.085	470	-	NB	
pyrene	0.49 - 1.4	0.026 - 1.0	-	0.062	0.1	14
bis(2-ethyl-hexyl) phthalate	0.89 - 22	1.1 - 3.0	20 -68	0.079 - 0.13	NB	
fluoranthene	0.39 - 1.2	0.071 - 0.91	-	-	0.1	
chrysene	0.26 - 0.9	0.062 - 0.61	-	0.065	0.1	9
2-methyl-naphthalene	0.02 - 0.062	0.13 - 1.3	58 - 710	-	NB	
benzo-a-pyrene	0.27 - 1.0	0.059 - 0.62	-	-	0.1	10
toluene	-	1.9	0.065 - 1200	-	0.1	12,000
barium	-	-	-	96.6 - 6270	440	14.25

NB = no benchmark.

Table 2. Contaminant concentrations (mg/kg) in sediment at the 12th Street Landfill/Dump Site.

		BTAG	Alternative Screen		HQ
Contaminant	Sediment	Screen	Freshwater	Marine	(BTAG)
lead	1120 - 8370	46.7	35 (TEL)	218 (ER-M)	179
arsenic	5.9 - 15.7	8.2	5.9 (TEL)	70 (ER-M)	1.9
zinc	153 - 1180	150	123 (TEL)	410 (ER-M)	7.9
phenol	0.049	0.42(AET)	0.48 (UET)	0.42 (AET)	0.1
dibenzofuran	-	NB			
bis(2-ethylhexyl)phthalate	0.028 - 1.0	1.3(AET)	7.5(UET)	1.3(AET)	0.77
fluoranthene	0.2	0.6	0.031(ARCs TEL)	5.1 (ER-M)	0.33
chrysene	0.16	0.384	26.8(ARCs TEL)	0.1(TEL)	0.42
2-methylnaphthalene	-	0.07			
benzo-a-pyrene	0.17	0.43			0.4
toluene	-	NB			

NB = no benchmark
TEL = threshold effects level
ER-M = effects range median
UET = upper effects threshold
AET = apparent effects threshold
ARCs TEL = lowest ARCs *H. azteca* threshold effects level

Table 3. Contaminant concentrations (µg/L) in groundwater compared to USEPA Region III BTAG screening values for surface water.

Contaminant	Groundwater	BTAG Screen Freshwater	BTAG Screen Marine	HQ (Max.)
lead	5.3	3.2	5.1	1.7
arsenic	5.2	874	10	0.52
zinc	75.5	30	19	3.97
phenol	0.002	79	5.8	0.0003
dibenzofuran	-			
bis(2-ethylhexyl)phthalate	-	30	360	
pyrene	-	NB	300	
fluoranthene	-	3980	16	
chrysene	-	NB	300	
2-methylnaphthalene	-	NB	300	
benzo-a-pyrene	-		0.21ng/ml	
toluene	-	17000	1050	